



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration

COMPETENT AUTHORITY CERTIFICATION
FOR A TYPE B(U)
RADIOACTIVE MATERIALS PACKAGE DESIGN
CERTIFICATE USA/0509/B(U)-96, REVISION 6

East Building, PHH-23
1200 New Jersey Avenue SE
Washington, D.C. 20590

REVALIDATION OF CANADIAN COMPETENT AUTHORITY
CERTIFICATE CDN/2072/B(U)-96

This certifies that the radioactive material package design described is hereby approved for use within the United States for import and export shipments only. Shipments must be made in accordance with the applicable regulations of the International Atomic Energy Agency¹ and the United States of America².

1. Package Identification - MDS Nordion F-127, F-127-X and RAI/F-127 Transport Packages, Serial Numbers 59 and up.
2. Package Description and Authorized Radioactive Contents - as described in Canada Certificate of Competent Authority CDN/2072/B(U)-96, Revision 6 (attached).
3. General Conditions -
 - a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.
 - b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.
 - c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

¹ "Regulations for the Safe Transport of Radioactive Material, 1996 Edition (Revised), No. TS-R-1 (ST-1, Revised)," published by the International Atomic Energy Agency(IAEA), Vienna, Austria.

² Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

CERTIFICATE USA/0509/B(U)-96, REVISION 6

- d. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations¹ shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.
4. Marking and Labeling - The package shall bear the marking USA/0509/B(U)-96 in addition to other required markings and labeling.
5. Expiration Date - This certificate expires on April 30, 2012.

This certificate is issued in accordance with paragraph 808 of the IAEA Regulations and Section 173.473 of Title 49 of the Code of Federal Regulations, in response to the April 11, 2008 petition by MDS Nordion, Ottawa, Ontario, and in consideration of other information on file in this Office.

Certified By:



Robert A. Richard
Deputy Associate Administrator for Hazardous Materials Safety

May 07 2008
(DATE)

Revision 6 - Issued to revalidate Canadian Certificate of Approval No. CDN/2072/B(U)-96, Revision 6, and to extend the expiration date.



Canadian Certificate No. CDN/2072/B(U)-96 (Rev. 6)	Issue Date Apr-10-2008	Expiry Date Apr-30-2012	CNSC File 30-A2-99-0
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Certificate for Transport Package Design

The transport package design identified below is certified by the Canadian Nuclear Safety Commission pursuant to paragraph 21(1)(h) of the *Nuclear Safety and Control Act* and Section 7 of the *Packaging and Transport of Nuclear Substances Regulations*, and to the 1996 Edition (Revised) of the *IAEA Regulations for the Safe Transport of Radioactive Material*.

REGISTRATION OF USE OF PACKAGES

All users of this authorization shall register their identity in writing with the Canadian Nuclear Safety Commission prior to the first use of this authorization and shall certify that they possess the instructions necessary for preparation of the package for shipment.

PACKAGE IDENTIFICATION

Designer: **MDS Nordion**
Make/Model: **F-127, F-127-X and RAI/F-127 Transport Packages, Serial Nos. 59 and up**
Mode of Transport: **Air, Sea, Road, Rail**

IDENTIFICATION MARK

The package shall bear the competent authority identification mark "**CDN/2072/B(U) - 96**".

PACKAGE DESCRIPTION

The F-127, F-127-X and RAI/F-127 transport packages as shown on MDS Nordion Drawing Nos. F101102-A06024 (Issue AD); F112701-001 (Issue K) or C101502-A09509 (Issue T), are finned cylindrical steel-encased-lead container assemblies with cylindrical fire shield, top shield cap and bottom shipping skid. The container assembly has a removable, lead-filled steel plug. Vent and drain lines are blocked either permanently or with removable cable assemblies. The containment system consists of either the authorized sealed sources or the F-407 leakproof insert, and the container assembly.

An illustration of the package is shown on attached Drawing Nos. F-127(1996) Issue 3, F-127-X(1996) Issue 3, RAI/F-127(1996) Issue 3.



Canadian Certificate No.	Issue Date	Expiry Date	CNSC File
CDN/2072/B(U)-96 (Rev. 6)	Apr-10-2008	Apr-30-2012	30-A2-99-0

The configuration of the package is as follows:

Shape: **Cylinder**
Mass: **3580 kg**
Length: **800 mm**
Width: **1020 mm**

Shielding: **n/a**
Outer Casing: **Steel**
Height: **1240 mm**
Diameter: **n/a**

AUTHORIZED RADIOACTIVE CONTENTS

The F-127 and F-127-X are authorized to contain:

a) not more than 2,200 TBq (60,000 Ci) of Cobalt 60 in the form of metal pellets or nickel-plated slugs in the following MDS Nordion capsules:

C-132, C-133, C-140, C-146, C-151, C-164, C-174A, C-174B, C-177, C-185, AC-191, AC-195, C 196, C-198, C-199, C-200, C-205, C-215, C-230, TC-239, C-252, XC 310, XC-318, C-320, XC 325, XC-330, AC-339 or welded stainless steel capsules that meet the requirements of the International Organization of Standardization, International Standard 2919 under classification number E53424, or special form sources, all with the capsules retained within a holder that distributes them throughout the cavity volume; or

b) not more than 185 TBq (5,000 Ci) of Carbon 14 in the form of activated aluminum nitride pellets contained within an aluminum capsule and further contained within a sealed F-407 insert; or

c) not more than 444 TBq (12,000 Ci) of Cobalt 60 in the form of nickel-plated pellets within Model C 373/C-374 sealed sources and the Model C-375 source holder.

The RAI/F-127 is authorized to contain not more than 2,200 TBq (60,000 Ci) of Cobalt 60 in the form of metal pellets or nickel-plated slugs in the MDS Nordion type C-132 or C-198 capsule.

QUALITY ASSURANCE

Quality assurance for the design, manufacture, testing, documentation, use, maintenance and inspection of the package shall be in accordance with:

- MDS Nordion Document No. IN/QA 0224 Z000 (7)*, "Radioactive Material Transport Package Quality Plan"
- MDS Nordion Document No. IN/DS 1861 F127(5), "Design, Manufacturing and Operating Specification for the F-127, F-127X and RAI/F-127 Transport Packages"
- Canadian Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations



Canadian Certificate No. CDN/2072/B(U)-96 (Rev. 6)	Issue Date Apr-10-2008	Expiry Date Apr-30-2012	CNSC File 30-A2-99-0
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- * or latest current revision

SHIPMENT

The preparation for shipment of the package shall be in accordance with:

- MDS Nordion Document No. IN/DS 1861 F127(5), "Design, Manufacturing and Operating Specification for the F-127, F-127X and RAI/F-127 Transport Packages"
- Canadian Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

Air transport is restricted to a maximum of 960 TBq of cobalt-60 to meet the temperature requirement of Paragraph 617 of the IAEA Regulations.

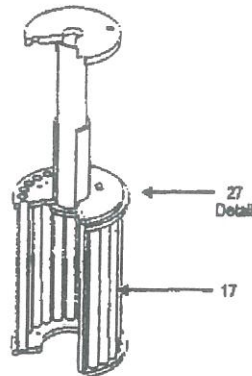
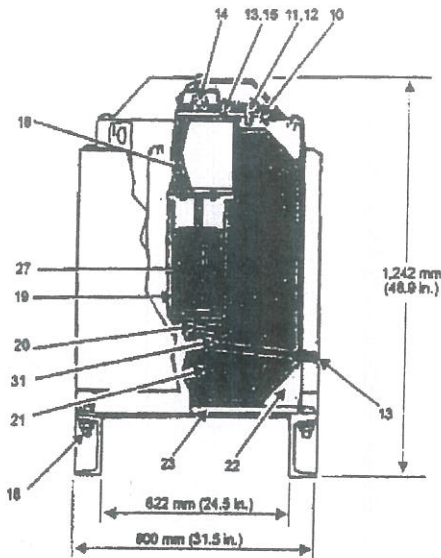
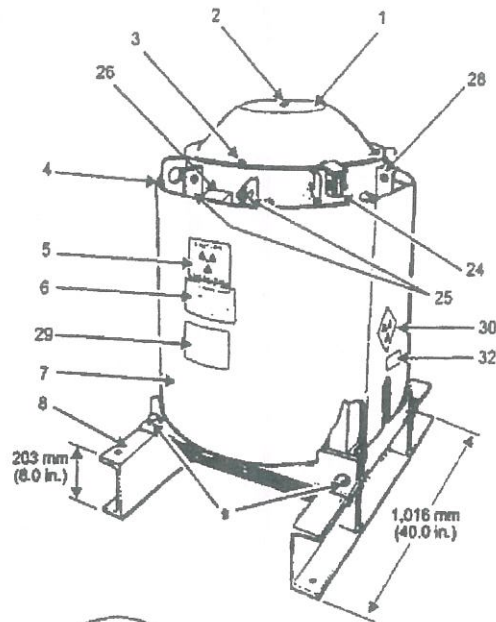
The average surface heat flux of the package with 2200 TBq of cobalt-60 is 164 W/m^2 . For heat fluxes exceeding 15 W/m^2 , supplementary arrangements must be made with the carrier to ensure adequate heat dissipation.

This certificate does not relieve the shipper from any requirement of the government of any country through or into which the package will be transported.

A. Régimbald
Designated Officer pursuant to paragraph 37(2)(a)
of the Nuclear Safety and Control Act

Parts List

1. Shield Cap with Neoprene Gasket
2. 1/2 — 13 UNC x 3/4 in. lg Hex Bolt (1)
3. 1/2 — 13 UNC x 1 1/4 in. lg Hex Bolt (4)
4. 1/2 — 13 UNC x 11/16 in. lg Socket Head (4) to Retain Fireshield
5. Radiation Caution Plate (2)
6. MDS Nordion Identification Plate (2)
7. Removable Fireshield
8. Removable Skid
9. Skid Bolts: 1 — 8 UNC x 3 in. lg Hex Head (8)
10. Neoprene Gasket for Plug Assembly
11. Socket Head Screws: 3/4 — 10 UNC x 1 1/2 in. (9)
12. Wire Seal
13. Stainless Steel Pipe Plug
14. Plug Lift Lug
15. Vent Tube (sealed off)
16. RAI Plug Assembly
17. Sealed Source
18. Levelling Screw Block & Screws (3)
19. Cavity
20. Drain Tube
21. Lead Shielding
22. Vermiculite
23. Transite or equivalent: 25 mm (1 in.) thick
24. Cap Brackets (4): 1/2 — 13 UNC x 1 1/4 in. Bolts and Nuts
25. Fireshield Brackets (4): 1 — 8 UNC x 2 1/4 in. Bolts and Nuts
26. Caution Plate/Bracket
27. Source Holder Assembly
28. Fireshield Brackets (2): 1/2 — 10 UNC x 2 1/2 in. Bolts and Nuts
29. Storage Plaque (Heat Emitter) (2)
30. Category Label (2): on opposite sides of container
31. Stainless Steel Wire Brush
32. UN Number Labels (2): one next to each of the two radioactive category labels



Notes

1. CNSC Certificate CDN/2072/B(U)-96
2. Standard F-127 Modified to MDS Nordion Dwg. No.: C101502-A09509
3. Meets IAEA Type B(U) Requirements
4. Lead Shielding: 254 mm (10 in.)
5. Gross Weight: 3,580 kg (7,900 lb.)
Plug Weight: 147 kg (325 lb.)
6. Projected Floor Loading: 4,405 kg/m² (905 lb./ft.²)
7. Authorized contents: 2,220 TBq (60,000 Ci) cobalt-60
8. For RAI/F-127 Serial Numbers 59 and up

MDS Nordion

447 March Road, P.O. Box 13500
Kanata, Ontario, Canada, K2K 1X8
Tel: (613) 592-2790 • Fax: (613) 592-6937

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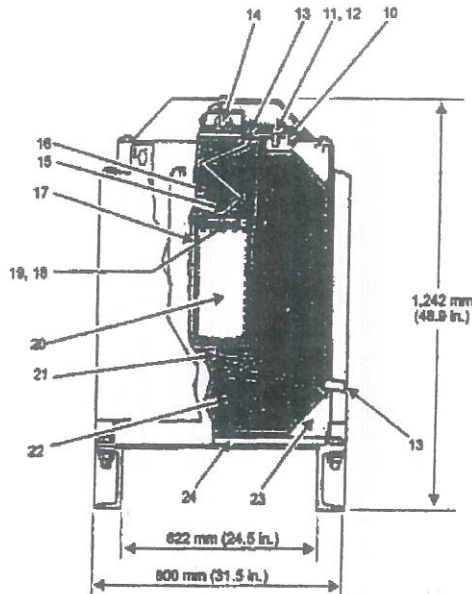
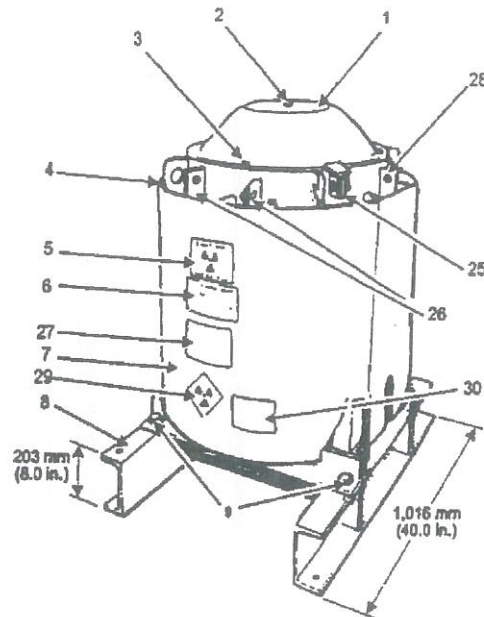
TITLE

**RAI/F-127 Transport Packaging
(To IAEA 1996 Transport Regulations)**

REF. IN/SS 1805 RAI-F127-96 C101502-A09509	REVISED Nov 03	DCN A2902-D-01A
DATE JUNE 2002	No.	ISSUE
DRAWN	CHECKED	APPROVED
J.C.	R.	ML
RAI/F-127(1996)		3
SHEET 1 OF 1		

Parts List

1. Shield Cap with Neoprene Gasket
2. 1/2 - 13 UNC x 3/4 in. lg Hex Bolt (1)
3. 1/2 - 13 UNC x 1 1/4 in. lg Hex Bolt (4)
4. 1/2 - 13 UNC x 11/16 in. lg Socket HD (4) to Retain Fireshield
5. Radiation Caution Plate (2)
6. MDS Nordion Identification Plate (2)
7. Removable Fireshield
8. Removable Skid
9. Skid Bolts: 1 - 8 UNC x 3 in. lg Hex HD (8)
10. Neoprene Gasket for Plug Assembly
11. Stainless Steel Plug Bolts: 1/2 - 10 UNC x 1 1/4 in. lg Hex HD (9)
12. Wire Seal
13. Stainless Steel Pipe Plug
14. Plug Lift Lug
15. Vent Tube (sealed off)
16. Plug Assembly
17. Removable Insert
18. Spacer Plate (2) - Type I - Removable
19. Spacer Plates (1) - Type II - Removable
20. Cavity - without 3 Spacer Plates 183 mm Dia x 348 mm (6.4 x 13.7 in.)
With 3 Spacer Plates 183 mm Dia x 320 mm (6.4 x 12.8 in.)
21. Drain Tube (sealed off)
22. Lead Shielding
23. Vermiculite
24. Tranelite or equivalent: 25 mm (1 in.) thick
25. Cap Brackets (4): 1/2 - 13 UNC x 1 1/4 in. Bolts and Nuts
26. Fireshield Brackets (4): 1 - 8 UNC x 2 1/2 in. Bolts and Nuts
27. Storage Plaque (Heat Emitter) (2)
28. Fireshield Brackets (2): 1/2 - 10 UNC x 2 1/4 in. Bolts and Nuts
29. Category Label (2): on opposite sides of the container
30. UN Number Labels (2): one next to each of the two radioactive category labels



Notes

1. CNSC Certificate CDN/2072/B(U)-96
2. Meets IAEA Type B(U) Requirements
3. Steel Encased Lead Shielding: 254 mm (10 in.)
4. Gross Weight: 3,580 kg (7,900 lb.)
Plug Weight: 147 kg (325 lb.)
5. Projected Floor Loading: 4,405 kg/m² (905 lb./ft.²)
6. Inserts Available:
F-128: Bucket
F-180: Cage for 64 Sealed Sources
F-216: Carrier for 8 Bulk Capsules
F-407: Leakproof insert for C-14
F-415: Bucket
7. Authorized contents: 1) 2,220 TBq (60,000 Ci) cobalt-60
2) 185 TBq (5,000 Ci) carbon-14
8. Drain Tube and Vent Tube are sealed off
9. For F-127-X Serial Numbers 59 and up

MDS Nordion

447 March Road, P.O. Box 13500
Kanata, Ontario, Canada, K2K 1X8
Tel: (613) 592-2790 · Fax: (613) 592-8937

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TITLE

**F-127-X Transport Packaging
(To IAEA 1996 Transport Regulations)**

REF. INSS 1864 F127X-96
F112701-001

REVISED Nov 03 DCN A2902-D01A

DATE JUNE 2002

No. **F-127-X(1996)**

ISSUE

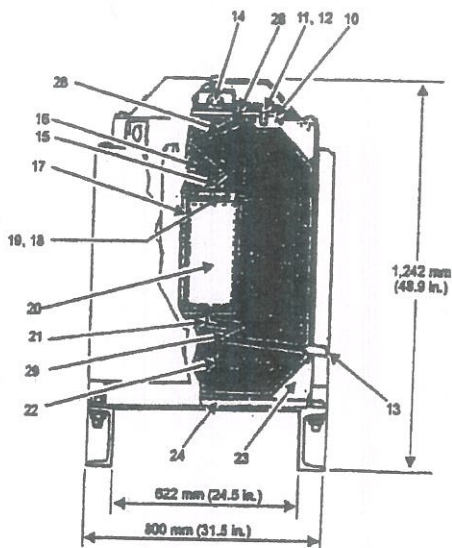
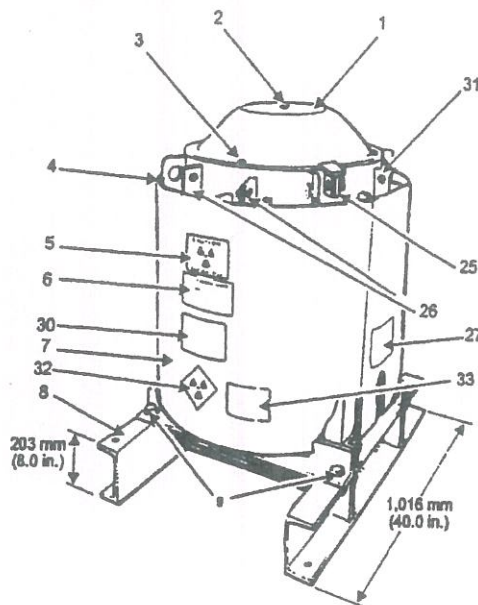
DRAWN CHECKED APPROVED

SHEET 1 OF 1

3

Parts List

1. Shield Cap with Neoprene Gasket
2. 1/2" — 13 UNC x 1/4 in. lg Hex Bolt (1)
3. 1/2" — 13 UNC x 1 1/4 in. lg Hex Bolt (4)
4. 1/2" — 13 UNC x 11/16 in. lg Socket HD (4) to Retain Fireshield
5. Radiation Caution Plate (2)
6. MDS Nordion Identification Plate (2)
7. Removable Fireshield
8. Removable Skid
9. Skid Bolts: 1 — 8 UNC x 3 in. lg Hex HD (8)
10. Neoprene Gasket for Plug Assembly
11. Stainless Steel Plug Bolts: 1/2" — 10 UNC x 1 1/2 in. lg Hex HD (9)
12. Wire Seal
13. Stainless Steel Pipe Plug
14. Plug Lift Lug
15. Vent Tube
16. Plug Assembly
17. Removable Insert
18. Spacer Plates (2) - Type I - Removable
19. Spacer Plates (1) - Type II - Removable
20. Cavity - without 3 Spacer Plates 163 mm Dia x 348 mm (6.4 x 13.7 in.)
With 3 Spacer Plates 163 mm Dia x 320 mm (6.4 x 12.6 in.)
21. Drain Tube
22. Lead Shielding
23. Vermiculite
24. Transite or equivalent: 25 mm (1 in.) thick
25. Cap Brackets (4): 1/2" — 13 UNC x 1 1/4 in. Bolts and Nuts
26. Fireshield Brackets (4): 1 — 8 UNC x 2 1/2 in. Bolts and Nuts
27. Warning Plate
28. Ventline Safety Cable Assembly
29. Stainless Steel Wire Brush
30. Storage Plaque (Heat Emitter) (2)
31. Fireshield Brackets (2): 1/2" — 10 UNC x 2 1/2 in. Bolts and Nuts
32. Category Label (2): on opposite sides of container
33. UN Number Labels (2): one next to each of the two radioactive category labels



Notes

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4. Gross Weight: 3,580 kg (7,900 lb.)
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2) 185 TBq (5,000 Ci) carbon-14
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**F-127 Transport Packaging
(To IAEA 1996 Transport Regulations)**

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REF. INSS 1863 F127-96
F101102-A08024

REVISED Nov03 DCN A2802-D-01A

DATE JUNE 2002

No.

F-127(1996)

ISSUE

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SHEET 1 OF 1



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Pipeline and
Hazardous Materials
Safety Administration

East Building, PHH-23
1200 New Jersey Avenue SE
Washington, D.C. 20590

CERTIFICATE NUMBER: USA/0509/B(U)-96, Revision 6

ORIGINAL REGISTRANT(S):

Mr. Marc-Andre Charette
Manager, Regulatory Affairs
MDS Nordion
447 March Road
Ottawa, K2K 1X8
CANADA

Luc Desgagne
Senior Licensing Coordinator
MDS Nordion
447 March Road
Ottawa, Ontario K2K 1X8
CANADA

Mr. Marc-Andre Charette
Manager, Regulatory Affairs
MDS Nordion
447 March Road
Ottawa, K2K 1XB
CANADA

REGISTERED USER(S):

Blair Menna
Best Theratronics Ltd.
Best Theratronics Ltd.
Care of MDS Nordion
447 March Road
Ottawa, K2K 1X8
Canada